

SAFETY ADVISORY 2010-03

May 20, 2010



COMMUNICATION DURING FRACTURE STIMULATION

A large kick ⁽¹⁾ was recently taken on a well being horizontally drilled for unconventional gas production in the Montney formation. The kick was caused by a fracturing operation being conducted on an adjacent horizontal well. Fracture sand was circulated from the drilling wellbore, which was 670m from the wellbore undergoing the fracturing operation.

To date, the BC Oil and Gas Commission (Commission) is aware of 18 fracture communication incidents in B.C. and one in Western Alberta as follows:

- Five incidents of fracture stimulation resulting in communication with an adjacent well during drilling.
- Three incidents of drilling into a hydraulic fracture formed during a previous stimulation on an adjacent well and containing high pressure fluids.
- Ten incidents of fracture stimulations communicating into adjacent producing wells.
- One incident of fracture stimulation communication into an adjacent leg on the same well for a multi-lateral well.

To date, all kicks taken during drilling were successfully controlled through conventional drilling safety measures (e.g. circulation with kill mud and/or reduction of the invading fracture stimulation pressure through controlled venting). Large kicks resulted in volumes up to 80m³ of fluids produced to surface. Invading fluids have included water, carbon dioxide, nitrogen, sand, drilling mud, other stimulation fluids and small amounts of gas.

Fracture fluids introduced into producing wells result in suspended production, substantial remediation costs and pose a potential safety hazard.

Incidents have occurred in horizontal wells with separation distances between well bores ranging from 50m to 715m.

Fracture propagation via large scale hydraulic fracturing operations has proven difficult to predict. Existing planes of weakness in target formations may result in fracture lengths that exceed initial design expectations.

**For oil and gas incidents and emergencies, please contact the Commission at:
1-800-663-3456 (24 hours).**

RECOMMENDATIONS

It is recommended that operators cooperate through notifications and monitoring of all drilling and completion operations where fracturing takes place within 1000m of well bores existing or currently being drilled.

Operators are reminded of Commission [Information Letter # OGC 08-20](#) which addresses communication and coordination with other operators during drilling and work over operations.

Finally, the Commission notes that any communication between fracture operations and existing well bores or well bores being drilled must be reported immediately to the Commission via the incident reporting line at 1-800-663-3456.

Should you have any questions regarding this Safety Advisory, please contact:

Graham Currie
Corporate Affairs Division
BC Oil and Gas Commission
250.419.4420
Graham.Currie@gov.bc.ca

⁽¹⁾ A kick is an unintended entry of water, gas, oil, or other formation fluid into wellbore that is under control and can be circulated out. It occurs when the formation fluid is driven by a formation pressure that is greater than the pressure exerted on it by the column of drilling mud in the wellbore. If the formation fluid is not controlled a blowout may result.